

What is claimed is:

Sub 21

1. In a pneumatic tire comprising a tread portion, a pair of sidewall portions and a pair of bead portions and a carcass toroidally extending between a pair of bead cores embedded in the respective bead portions and comprised of at least one rubberized carcass ply containing steel cord(s) therein, in which the carcass ply is wound around the bead core from an inside of the tire toward an outside thereof in a radial direction to form a part or a whole of a wound portion of the carcass ply as a wind contact part along the peripheral face of the bead core, the improvement wherein at least one steel cord reinforcing layer is arranged in the bead portion.

2. A pneumatic tire according to claim 1, wherein when using two or more steel cord reinforcing layers, a main body of the carcass ply other than the wound portion is sandwiched between two steel cord reinforcing layers in a thickness direction thereof.

Sub 27

3. A pneumatic tire according to claim 2, wherein steel cords constituting one of the steel cord reinforcing layers are extended in a direction opposite to at least one of a cord extending direction of the other steel cord reinforcing layer and a cord extending direction of the carcass ply.

Sub 22

4. A pneumatic tire according to claim 1, wherein the wind contact part is formed by subjecting the carcass ply to plastic deformation in at least one of positions corresponding to corner parts of the bead core.

5. A pneumatic tire according to claim 1, wherein the steel cords constituting the steel cord reinforcing layer have a cord diameter of 1.00-1.50 mm, and a free end of the steel cord has a flare having a scattering width within a range of 1.0-1.5 times the cord diameter.

6. A pneumatic tire according to claim 5, wherein the steel cords are arranged in the steel cord reinforcing layer at a distance between the cords of 1.00-1.50 mm in a direction perpendicular to a longitudinal axis of the cord.

sub  
a2

7. A pneumatic tire according to claim 1, wherein the steel cord constituting the steel cord reinforcing layer is a Z-lay outer-sheath structure.

8. A pneumatic tire according to claim 1, wherein a start end of the steel cord reinforcing layer located at a side of a main body of the carcass ply is arranged so that a shortest distance (L) measured outward from a normal line (n) drawn at a first rim line position to an outer face of the bead portion in the radial direction of the tire is positioned within a range of 15-25 mm, while a terminal end of the steel cord reinforcing layer located at a side of the wind contact part of the carcass ply is arranged so as to position within a range sandwiched between a vertical line (m) drawn from an outermost end position of the bead core in the radial direction to the outer face of the bead portion and the normal line (n).

sub  
a1

9. A pneumatic tire according to claim 1, wherein at least one organic fiber chafer is arranged at the side of the wind contact part of the carcass ply so as to cover the terminal end of the steel cord reinforcing layer.

sub  
a3

10. A pneumatic tire according to claim 9, wherein the organic fiber cords constituting the organic fiber chafer are arranged at a cord angle of 15-75° with respect to an arranging direction of the steel cords constituting the steel cord reinforcing layer.

11. A pneumatic tire according to claim 1, wherein a cushion rubber layer is interposed between the main body of the carcass ply and the start end portion of the steel cord reinforcing layer.

12. A pneumatic tire according to claim 11, wherein the cushion rubber layer at the position of the start end of the steel cord reinforcing layer has a rubber gauge of 1.5-2.0 mm viewing a section in a widthwise direction of the tire.

add